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A Review of Research on Learning to Teach

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A Review of Research on Learning to Teach

Introduction

In her biography of John Adams, Catherine Drinker Bowen (1949) describes how, shortly after graduating from Harvard, Adams accepted a teaching position in Worcester, Massachusetts, in the town's boys' school, where he was the sole teacher of 50 boys ranging in age from 5 to 15 years. Adams had neither training in pedagogy nor a mentor, so he initially adopted the teaching methods he recalled from his boyhood teacher, Mr. Cleverly.

> . . . John divided the room in sections as he remembered Mr. Cleverly had done, the smallest boys in front, the big boys behind. While one section recited, the other "studied" out loud, learning by rote whatever was placed before them, from spelling to Lilly's Latin Grammar. The continual drone acted, hour upon hour as soporific for teacher as well as for pupils. John's eyes closed, he jerked himself awake, wondering desperately if some such buzzing drone did not accompany, in hell, the pangs of the tormented . . . Was this, then, what New England spoke of so proudly as "education"? (p. 123)

As the school year wore on, Adams' dissatisfaction continued, until one day:

> . . . he resolved to do something to make his school less boring, more effectual. If a man were sunk in a hole, the least he could do was try to make the hole more bearable. At home on Wollaston beach John had picked up some cockle shells, an empty lobster claw. He tied them in a handkerchief and brought them to Worcester. He would set his scholars to collecting stones and minerals, tell them something of natural history, of the tides and stars, the solar system as he had learned it from Professor Winthrop. There was no reason also why the boys should not search for beetles and grubs, bring them to school and even dissect them after the fashion of the Harvard aparatus chamber.
>
> The plan succeeded far beyond his hopes. There was something touching in the boys' response. From the biggest to the littlest, John's scholars arrived with boxes containing such treasures as three very dead beetles, a torpid snake, a toad scooped out of the Reverend MacCarty's well . . . In spite of himself, John began to find his school less hateful. On spelling-bee days the rivalry became intense. John had instituted prizes (a bit of sugar candy, an old bent fishhook from his own pocket). Afterward the outspelled team invariably sat down and cried heartily.

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ABSTRACT

This paper summarizes research-based knowledge about how teachers learn to teach. Rather than presenting a study-by-study review of the literature, major themes are delineated that are present in the body of research about teaching, and a limited number of studies are reviewed. Two broad lines of inquiry on the process of learning to teach are evident in the research. One point of view considers mainly how teachers adapt to and acquire the teaching role. Earlier research in this vein tended to regard the new teacher as shaped by a system and reactive to it. More recent research, while not denying the potency of socialization forces, has emphasized the individual nature of teacher development and the ability of individuals to affect their own destiny. A second point of view is that of teacher education as a process of skill acquisition. This type of research examines conditions that facilitate the learning of particular teaching behaviors or knowledge about teaching. The accumulated findings from this research provide a basis for designing training programs to achieve short-term behavior changes. (JD)

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This glimpse of teaching in Prerevolutionary times suggests some of the timelessness of questions about how teachers learn to teach. John Adams' imitation of Mr. Cleverly's methods is understandable in light of the absence of other models and the press to "keep school" for 50 boys. The impact of earlier school experiences on subsequent teaching behavior has been noted by several writers (e.g., Lortie, 1975; Nemser, 1983). In addition, research influenced by the ecological perspective tells us that the setting shapes and constrains the new teacher's actions and decisions. However, teachers are not just "acted upon" by their surroundings -- they are proactive as well, as John Adams' adaptation of Winthrop's science teaching method and his use of incentives clearly illustrate.

A simple answer to the question of how did John Adams learn to teach is "by doing it," a similar perspective which is evident in much of the self-report literature on teachers. Yet the influence of other factors -- the Mr. Cleverly's and Professor Winthrop's -- may be crucial and understated. Once teachers adapt procedures to their particular setting, they "own" them; the unique features of the setting along with a recency effect may diminish the degree to which they perceive other influences on their teaching.

The purpose of the following sections is to summarize research-based knowledge about how teachers learn to teach. "Summarize" is used purposely because the topic is too extensive to allow a study-by-study review of the literature. Instead, the intention is to delineate the major themes that are present in the body of research about teaching and to review a limited number of studies.

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Research Prior to the 1970's

During the 1960's and early 70's, there was a heightened interest in teacher education along with attempts to modify and improve it. The fermentation during the period resulted in publications that expressed a variety of perspectives about processes of learning to teach. A basis for understanding current knowledge in this area can be obtained by examining several of these earlier sources including chapters from the Second Handbook of Research on Teaching (Travers, 1973); the 74th NSSE Yearbook, on teacher education (Ryan, 1975), B. O. Smith's edited book on Research in Teacher Education (1971), and Lortie's sociological perspective presented in Schoolteacher (1975). Taken together these works provide a foundation for several current lines of inquiry.

Peck and Tucker's chapter, "Research on teacher education," in Travers (1973) identified several generalizations supported by the research literature they reviewed. The strongest was for the efficacy of a "systems approach," including the specification of behavioral objectives, teaching toward them, and provision of feedback based on the objectives. Microteaching, minicourses, and behavior modification training utilized "systems" components, and numerous evaluations indicated they were effective in producing behavior change, at least in the short run. Long-term change effects were variable, and were influenced by the degree of support for change in the teaching setting.

The 74th NSSE Yearbook (Ryan, 1975) included several chapters related to the topic of learning to teach. Fuller and Bown (1975) presented a model of individual preservice teacher development, based on their own (Fuller, 1969) and other research that emphasized personal motivation. According to this model, preservice teachers move through stages of concerns focused on different components of their life space.

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Prior to contacts with students, they identify with the student role and may be unsympathetic with the authority role of the teacher. Once they begin working with students they express "survival" concerns about class control, the ability to display knowledge of their content to students, and supervisor evaluations. In a third stage, concerns about pupil learning and emotional growth may become more salient, and the teacher may become more consequence conscious. However, these later, "more mature" concerns may not come to the fore and teachers may remain in earlier stages, or else may cope adequately with survival concerns, but never extend their horizons. Fuller and Bown argued that many teachers find their preservice teacher education programs ineffective and that this stems from the lack of fit between concerns of the teachers and the sequencing of content and experiences in the programs.

Chapters by Turner in the same Yearbook (1975) and in Smith (1971) reviewed research in teacher education. Turner focused on aspects of teacher preparation related to subsequent work success defined in terms of student achievement, good student social habits, or mental health. He organized the literature review according to an input-output model, with inputs that included selection, training, and placement variables. He also examined relationships among the input levels and moderator variables.

Selection factors reviewed were mainly sex-related and showed a parental bias toward daughters entering teaching, as well as earlier and more stable career choice for women. Only one study relating preservice aptitude and achievement characteristics to teaching performance (measured by administrator ratings) was reviewed, but it found no relationships. Of interest, however, was the fact that a pre-student

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teaching rating by a selection committee was positively correlated with subsequent administrator ratings of success. Turner noted that most training studies attempt to gauge effectiveness by assessing the immediate behaviors of the teachers rather than longer range outcomes related to pupil achievement. In agreement with Peck and Tucker, Turner's review indicated positive training effects resulting from minicourses and microteaching, including some that showed effects on teacher behaviors in long-term, follow-up observations. A number of studies were also reviewed describing variations and facets of microteaching training procedures as well as studies comparing training effects on different types of teachers (e.g., high and low perceptual aptitude). Turner also reviewed several studies showing a positive correlation between teaching performance as assessed by ratings during student teaching and later (e.g., after 1 year) administrator ratings, and one study showing a positive correlation of the student teaching rating with later student achievement gain. A study conducted with secondary English students as pupils showed that graduates of an experimental teacher preparation program (NUSTEP) produced significantly greater achievement than graduates of traditional programs. The experimental program was based on an objectives oriented approach. Another experimental study used microteaching and interaction analysis, and found effects on teacher behaviors, but little effect on student achievement. A third study used student judgment as the criterion for teacher success and found strong effects for a microteaching treatment. Only a few studies were reported on the relationship of placement characteristics to teacher success and to selection and training. Evidence from the reviewed studies indicated that teacher candidates

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tended to prefer placement in communities similar to those of their own origin, and that changes in teaching skills were related to the amount of supervision received by the beginning teacher. Turner also indicated the absence of longitudinal studies of relationships of selection, training, placement, and teaching success.

The identification of specific teaching behaviors leading to student achievement was viewed in a number of influential books or articles as the foundation for teacher training (Dunkin & Biddle, 1974; Gage & Winne, 1975; Rosenshine & Furst, 1973). The specification of such behaviors was viewed as a necessary component of performance-based teacher education, microteaching, and similar approaches. As Joyce (1975) pointed out, this approach made several assumptions about how a teacher training program should be designed. Some of these assumptions include:

> The teacher was viewed as a clinician in much the same sense that physicians are clinicians, that is, as a possessor of strategies for making instructional decisions and the knowledge and skills needed to carry out these decisions.
>
> Needed competencies of the teacher would be defined in terms of specific behaviors and these behaviors would be matched with specific learning experiences and arranged in instructional modules designed to achieve the objectives.
>
> The teacher would have available to him knowledge from the behavioral sciences which he could use to make and carry out educational decisions. (Joyce, 1975, p. 140)

Inherent in these assumptions about training programs are assumptions about how teachers learn to teach. For example, teaching patterns and strategies can be acquired in small discrete components; such training generalizes to classroom settings and across contexts; teachers' conceptual or attitudinal characteristics are either irrelevant or are sufficiently malleable to assure acceptance or

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utilization of the trained behaviors post-treatment. Research left little doubt of the power of the "systems" approaches to produce behavioral change in the training context. The research, however, also showed that maintenance of such change or transfer to other contexts was problematic.

A final influential perspective in the 1970's on learning to teach was sociological: A consideration of factors that influence occupational choice and that affect the way in which individuals come to identify with and accept the teaching role's shared definitions of work, expectations, and values; that is, socialization into the role. Research on this topic is summarized in a number of sources including Charters (1963), Dreeben (1973), and Lortie (1973). In addition, in his book, Schoolteacher, Lortie (1975) presented a research-based perspective that has been frequently cited. He noted that experienced teachers are often ambivalent about their training. They feel that teaching is a complex and difficult task and that preparation for the role could be useful; however, they do not cite their own training as being especially helpful, except for student teaching. Lortie believed that the "apprenticeship of observation" plays an important though limited role in socialization into teaching. As students, teachers-to-be observe their own teachers for thousands of hours and they are able to form a very concrete conception of the public role of the teacher. Lortie noted though, "It is improbable that many students learn to see teaching in an ends-means frame or that they normally take an analytic stance toward it" (p. 62). Students, after all, do not usually have an opportunity to assume a teacher's role and to live with the consequences of the teacher's actions and decisions.

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Teachers' conceptions of teaching do not appear greatly changed as a result of their training programs, Lortie argued. His interview data showed that teachers did not perceive a dramatic shift in their thinking about teaching after training or even after entry into the teaching ranks. He speculated that this continuity of beliefs is a function of the long "apprenticeship of observation," and might make teachers resistant to change. The ability of teacher education programs to have strong effects on their students is hampered by the lack of an organized body of knowledge about actual teaching practices and their effects -- that is, validated experience. Consequently, " . . . the beginner in education must start afresh, largely uninformed about prior solutions and alternative approaches to recurring practical problems" (p. 70).

Recent Lines of Inquiry

Research on learning to teach since the early 1970's has continued to focus on several of the major components of the teacher preparation process. As before, inquiry has been dominated by short-term evaluations of relatively small parts of the process or by retrospective studies using teacher perceptions. However, some research has been more intensive and extensive, providing a more coherent view of processes involved in learning to teach. Research will be summarized below in several major categories: acquisition of teaching skills and behaviors, teacher socialization and development, and development of clinical knowledge and skills.

Acquisition of teaching behaviors and skills. A substantial part of the teaching job is taken up by interaction with and supervision of students. Consequently, how teachers acquire the behaviors they exhibit while in direct contact with students during instruction has been a

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major concern of research. Reviews cited above agreed on the appropriateness of a "systems" approach, mainly consisting of specification or modeling of desired behavior, providing for controlled practice, and feedback to the teacher after practice. Treatment efficacy can be judged by comparison to a control group (usually no treatment) or on the basis of a pre-post comparison of means on relevant variables. Recent research has continued to support the general efficacy of this approach to teaching particular skills. Individual studies are too numerous to cite; however, the general tenor of results can be seen in a meta-analysis of 68 studies of teacher education practices associated with inquiry instruction in science (Sweitzer & Anderson, 1983). Treatments in the studies were categorized according to treatment organizational pattern, type of instruction, mode of instruction, source of structure, and training technique. Effect sizes (in standard deviation units) associated with some of the training variations included: feedback -- .67, modeling -- 1.56, micro-teaching peers -- .72, micro-teaching students -- .81, and behavior coding training -- 1.37. These results are not confined to this topical area or even to predominantly U.S. research. For example, Wragg (1982) reviewed numerous studies in nonscience areas conducted outside the United States (chiefly in Commonwealth countries and Europe) which produced similar results.

Before concluding that the millennium has arrived, it must be noted that the assessment of effects in such studies is usually limited to the experimental setting. That is, neither transfer of learning nor generalization from the training site to the classroom is typically assessed. When attempts have been made to determine the extent of

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generalization beyond the experimental setting the results have been mixed. Some studies have produced positive results (e.g., Borg & Ascione, 1982; Merrett & Wheldall, 1982); however, others have not (e.g., Copeland, 1977; Kilgore, 1980). Overall, the results in generalization studies are certainly less impressive than in studies which have limited their focus to immediate, post-treatment performance.

In a review of behavioral teacher training, Robinson and Swanton (1980) found convincing evidence for generalization in three of six cited studies meeting stringent inclusion criteria. The reviewers indicated that two factors differentiated the successful and unsuccessful studies: the extensiveness of training of the teachers and more favorable attitudes toward the training. Programs that were more extensive provided longer training periods with more attention to principles and a greater variety of examples and tasks for practice. Also, programs with little evidence of generalization reported problems with teachers' negative attitude toward the suggested strategies (e.g., operant techniques).

Copeland (1977, 1981) notes that during preservice training a lack of generalization of behavior learned in micro-teaching to the regular classroom may be caused by ecological conditions, including the absence of the cooperating teacher's practice of the relevant behaviors. In his study, Copeland found evidence for generalization only when the student teachers taught in classrooms where the students were used to the regular teacher's practicing the method being used. Thus, the ecological system of the class affects whether the student teacher achieves success in transferring skills. Copeland argues that clinical experiences should include both diagnosis of learners in classrooms,

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prescription for improvement, and critical feedback. In this way, the student teachers can begin to learn the complex relationships among student and teacher behaviors.

Two other sets of studies pertinent to the question of transfer or generalization should be noted. The first is a set based on process-product research and the teacher effectiveness literature (Anderson, Evertson, & Brophy, 1979; Crawford, Gage, Corno, Stayrook, Mitman, Schunk, Stallings, Baskin, Harvey, Austin, Cronin, & Newman, 1978; Emmer, Sanford, Clements, & Martin, 1982; Evertson, Emmer, Sanford, & Clements, 1983; Good & Grouws, 1979). In these studies, teacher manuals and workshops based mainly on recent process-product research were presented to groups of experimental teachers, but not to control groups. In each study, changes in teacher behavior and student behavior and/or achievement favored the experimental group, indicating that teachers had generalized at least some of the desired behaviors to their own classroom setting from the training site. Another set of studies pertinent to the generalization issue was conducted by Showers and her associates in order to determine the effects of "coaching" on teacher's acquisition and subsequent use of selected models of teaching (Baker & Showers, 1984; Showers, 1982, 1984). Coaching consisted of instruction and support given by someone skilled in the teaching model which the teacher was attempting to acquire, and was provided during the time when the teacher was trying out the behavior in the classroom. Initially, teachers were given skill training, including lectures and peer teaching outside their classrooms. Then, during implementation, four coaching sessions were provided. Observation showed that the teachers who received coaching obtained higher implementation scores during a later

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transfer phase, compared to teachers who had received only the initial skills training. A second study, similar to the one described above, yielded similar results, and a 6 month follow-up of the first study produced evidence for maintenance of the teaching skills. Treatment effects were attributed to a number of factors related to the coaching strategy, including an expectation shift, perceived support, "prodding" -- or perhaps accountability, and practice (it was noted that the total reported time spent using the models correlated highly with the transfer measure). An impediment to transfer was finding appropriate places in the curriculum for use of the strategies, which emphasized conceptual and theoretical information processing.

The pattern that emerges from the research on the acquisition of specific teaching behaviors and skills indicates that teachers can and do learn these in the instructional or training context, and that specification of the desired behaviors, modeling, discrimination training, practice, and feedback all aid in the acquisition of the skills. However, generalization beyond the training context does not follow as a necessary consequence of this initial learning. Doyle and Ponder's (1977) criteria for teacher acceptance of a proposed classroom strategy as "practical" seem appropriate when viewing these results. They argue that instrumentality, congruence, and cost are key factors in the teacher's eventual use of a proposed strategy. The studies showing generalization typically presented the desired strategy in terms of classroom behaviors and procedures that were consistent with what the teachers saw as desirable, thus meeting the criteria of instrumentality and congruence. Cost -- that is, effort-to-return ratio -- appears to be overcome either by providing especially supportive conditions or by

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selecting target behaviors which are highly important to the teachers, such as student achievement or student on-task behavior.

Influences on Teacher Socialization and Teacher Development

Recent research in this broad area has highlighted two concepts: differential response of individual teachers to programs and contexts, and consistencies in teacher attitudes and concerns.

Intensive case studies of two preservice teachers in their first year of professional preparation epitomize differential rates of development (Feiman-Nemser & Buchman, 1984). "Janice," in an academic program with limited field experiences, did not progress far in how she conceptualized teaching or viewed herself as a teacher. She expressed self-doubts that did not move toward resolution. She relied on memories of teachers and assimilated rather than modified her thinking to accommodate new information about teaching. "Sarah," in a program which emphasized observation and guided questioning along with some teaching, appeared to make discoveries about herself in the teacher's role and to change her thinking. She increased in confidence and began to think more analytically about teaching, although not to the point of considering long-term consequences and her impact beyond the immediate setting.

Tabachnick, Zeichner, Densmore, and Hudak's study (1983) of four beginning teachers also emphasizes diversity in their response to their settings. The researchers note that not all teachers experience "reality shock" or a loss of idealism, and that influences on teacher socialization are often indirect and inferred by teachers; thus, there is considerable leeway for individual differences in susceptability to influence. Furthermore, teachers do not passively accept all influence,

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but rather selectively use information and act on the environment themselves.

A longitudinal study of new teachers' attitude change and stability (Hogben & Lawson, 1984) similarly showed differential effects. The attitudes of four secondary teachers were examined at different times before and during their first year of teaching. One teacher was stable on most attitudes while the other three evidenced varying degrees of changed attitudes, possibly as a function of the receiving schools' provisions for new teachers during the induction year.

A longitudinal study by Lacey (1977) and case studies by Ryan and his colleagues (1980) illustrate both the consistencies in the socialization process and individual differences in adaptation.

Lacey followed three groups of teacher education students, mainly secondary, through fifth-year university programs in England and into their first year of teaching. The methodology of the study was participant observation along with some use of questionnaires and interviews. During their professional year, students worked as student teachers for three days per week and also met regularly with an education tutor (university supervisor). Lacey discerned several stages in the student teachers' perceptions of and reactions to student teaching: a honeymoon period; a search for material and ways of teaching after encountering problems with planning, organizing, and discipline; and a crisis stage in which problems become more serious and threaten the student teacher's self-esteem. A variety of coping strategies were noted, including strategic compliance, internalized adjustment, and strategic redefinition of the problem. Students varied in the degree to which they were sensitive to their settings and able to adjust to the

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situation. Student teachers who failed in their program seemed to use strategies of strategic redefinition, "going public" with their problems, and displacing blame (for example, onto "the system").

Lacey noted at least two basic forms of commitment to teaching: (1) a professional commitment to teaching combined with a liberal and naturalistic perspective about pupils, and (2) a somewhat more radical commitment to a set of ideals about education and society, but not to teaching per se. If frustrated by teaching pressures, the latter type of teachers were more likely to consider other careers. Student teachers, Lacey argues, are able to affect their socialization both by their choice of a university program and by using different coping strategies within a program.

A follow-up study of teachers in their first year suggested in the main continuity of attitudes and an interpretation of events consistent with earlier perspectives. Teachers with a more radical perspective tended to blame problems on the schools and the system. More traditional teachers tended to blame the students or "unwise" reform attempts for problems. However, a few teachers did change their perceptions markedly. Thus it is concluded that student teaching and the beginning year loom large in their impact and the challenge they pose for the new teacher. Yet many individuals move through these experiences with perceptions and attitudes relatively intact. Also, teachers choose particular programs or courses of study and seek teaching positions that are more or less consistent with their views and expectations.

A recent review of research on beginning teachers' perceived problems provides a good summary of the interplay among teacher

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perceptions, development, and socialization influences. Veenman (1984) reviewed 83 studies of perceived teacher problems. Noting that findings were similar for elementary and secondary teachers and in both United States and non-United States studies, Veenman found that classroom discipline was the most frequently perceived problem, followed by motivating students, dealing with individual differences, assessing student work, relations with parents, organization of classwork, insufficient materials and supplies, dealing with problems of individual students, heavy teaching load, and relations with colleagues (the top 10 concerns). Veenman also noted that beginning teachers report that they moved to a more authoritarian style and away from a pupil-centered approach. Numerous other studies have shown an attitude shift toward more custodial pupil control; such findings are consistent with the high concern evidenced for discipline during student teaching and during the first year of teaching. Other longitudinal studies have shown that teacher attitudes before training tend to be conservative, become more liberal during teacher training, and then shift back to more conservative ones during the initial teaching experiences. Veenman notes that such shifts are probably due less to the effect of teacher training than to the overall impact of university life. Also, as noted previously, differential attitude shifts occur and some teachers do not revert to earlier attitudes.

The consistencies in reports of perceived problems across settings speak to the impact of the school settings and other occupational characteristics, while the intensive case studies of small numbers of teachers indicates differential impact on teacher attitudes and behavior. Although some studies have investigated variables related to

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individual and situational differences (cf. Veenman, 1984, pp. 156-157) the variety of instruments, contexts, and variables is great relative to the number of studies, so that no clear pattern of results has emerged. Variations in these concerns and in attitudes as a function of specific types of contexts or characteristics of the teachers awaits further research.

Acquiring Clinical Knowledge and Skills

This component of learning to teach differs from the acquisition of specific skills and behaviors in that it is more concerned with applications of knowledge and skills in the field and how a teacher brings to bear prior training and experiences to deal with problems in real classrooms with actual students. In contrast to the literature on teacher socialization and development, research on clinical teaching is focused on processes that produce behavior change or that increase knowledge, in addition to the development of teacher attitudes and role adoption.

Recently extensive studies of clinical teacher education, including student teaching and induction, have been conducted by Griffin and his colleagues in the Research on Teacher Education Project at the R&D Center for Teacher Education.

In the student teaching study (Barnes & Edwards, 1984; Griffin, Barnes, Hughes, O'Neal, Defino, Edwards, & Hukill, 1983) 93 student teachers, 88 cooperating teachers, and 17 university supervisors in two large universities were studied. The foci for the study were the participants (cooperating teacher, student teacher, university supervisor), their interactions, and the school and university context. The intention was to describe these factors and their relationships in

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detail, including characteristics, roles, satisfactions, expectations, supervisory processes, teaching behaviors, criteria for evaluating organizational properties, and demographic characteristics. Methodology included extensive observations, interviews, participant journals, analyses of supervisory conferences, and questionnaire and tests. Several conclusions were drawn from a variety of quantitative and qualitative analyses. Participants in the two sites did not differ much in the array of cognitive, personal, and attitudinal variables that were measured -- even though they came from rather different geographic locations and attended different universities. Also, on most measures the student teachers and cooperating teachers were similar, although the student teachers had lower verbal ability (as measured by a vocabulary test) than the cooperating teachers. Contrary to the view of student teaching as a powerful intervention, only modest changes were found in student teacher attitudes and beliefs: a decrease in concerns, an increase in flexibility, and a trend toward increased conservatism in educational philosophy. It appears that student teaching tends more to reinforce existing perceptions and attitudes, rather than to challenge them. In agreement with earlier research, the study's findings indicate that supervision of the student teachers is mainly the function of the cooperating teacher as opposed to the university supervisor. Supervisory interactions between the cooperating teacher and student teacher generally focused on specific classroom events, rather than on principles or different conceptualizations of the events. Much of the basis for discussion was "Does it work?" rather than drawing upon the existing research base about learning and instruction. Also, topics discussed in the supervision process were focused on immediate concerns

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relevant to the classroom situation, rather than on the teacher's role beyond the immediate setting and the day-to-day events.

Student teachers, as well as cooperating teachers and university supervisors, mainly viewed the experience in affective or "interpersonal" terms, rather than from the standpoint of increasing instructional skills, promoting student learning, or understanding the school, community, and classroom settings. As in other studies, student teachers gave high ratings to the experience. The student teaching experience thus emerges as an intense, but relatively isolated experience, a trial-and-error process, guided by a cooperating teacher and, to a lesser degree by the university supervisor, with little articulation among the choices of method, research base, codified knowledge, or expected outcomes. Some of the components identified in other research as helpful for acquiring teaching skills are frequently present: that is, feedback, practice, and a supportive "coach;" however, there is not much emphasis on clearly stated goals and objectives or a conceptual framework that would allow the student teacher to interpret events and develop a sound basis for generalization of newly learned skills to other contexts.

While the preceding conclusion may be a lukewarm endorsement for student teaching, the description does not necessarily apply to all subjects in the Griffin et al. (1983) study. For example, Barnes and Edwards (1984) selected subsamples of student teachers to provide contrasting cases of three more effective and three less effective student teaching experiences. The judgments of effectiveness were based on a composite assessment by several judges using ratings of progress during the student teaching semester, readiness for regular teaching,

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and influence of the cooperating teacher on the student teacher. The more effective and less effective subgroups were not different from each other on a variety of cognitive and affective variables assessed prior to student teaching. However, differences occurred in several areas. The student teachers in the more effective group expressed greater satisfaction with their experience at the end of the semester, and both the cooperating teachers and the student teachers rated each other more positively in the more effective than in the less effective dyads. University supervisors also gave the student teachers higher evaluations in the more effective dyads. The student teachers and the cooperating teachers in the less effective dyads had more inappropriate student behavior than teachers in the more effective dyads. Also student teachers in the more effective experiences permitted less student movement than their cooperating teachers, whereas student teachers in the less effective dyads permitted (or experienced) greater student movement than their cooperating teachers. Interaction patterns between the cooperating and student teachers, as indicated in tapes of supervisory conferences and in logs maintained by the teachers, also differentiated the more and less effective dyads. In the more effective student teaching experiences, the cooperating teachers communicated more clearly and specifically about the student teachers' instruction and planning. These cooperating teachers were themselves more consistent in what they said and what they actually did during instruction, and they were more analytical and reflective in how they talked to the student teacher about teaching. The more effective cooperating teachers seemed more willing to accept the student teacher's deficits and work past them rather than complain about the student teacher's inadequacies. The

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Griffin et al. student teaching study provides a detailed description of the experience based on a sufficient number of student teachers to avoid the pitfalls of generalization that occur in the small sample or case study research literature. Also, the results of the student teaching study certainly provide a sounder basis for future research and for improvement than studies that accept uncritically the student teachers' positive perceptions of their experience.

A study of 16 first-year elementary and secondary teachers participating in mandatory induction programs in two states provides additional information about clinical experiences (Edwards, 1984; Griffin, O'Neal, Barnes, Hoffman, Edwards, Paulissen, Salinas, & Defino, 1985; Hoffman & O'Neal, 1985). The induction programs had varying impacts, from producing "marked and significant" change in new teacher behavior to apparent strategic compliance or indifference. Successful experiences were attributed to a strong support committee working with the beginning teacher as well as to a strong principal. An examination of perceived sources of influence on beginning and experienced teachers indicated that both groups rated "day-to-day experiences with students" as most critical. The next three ranked sources of influence for new teachers were contacts in school, student teaching, and program requirements. For experienced teachers, their family, the principal, and contacts in schools were the next three ranked sources of influence after day-to-day contacts with students. Although all teachers were observed extensively and evaluated as part of their induction programs, the evaluation process did not appear to have a major impact on their teaching activities. The results of the inducation study indicate the importance of the immediate context in the teachers' perceptions of

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influences on their behavior. A related finding was that the beginning teachers who had done their student teaching in the same school in which they were currently teaching rated their student teaching experience as especially influential. This result also suggests that perceptions of importance are strongly shaped by experiences in similar contexts.

Various approaches have been suggested for improving the quality of clinical experiences. For example, Smyth (1984) argues for a more collegial relationship between teachers in order to promote greater self-understanding and more "frequent, continuous, and increasingly concrete and precise talk about their teaching." Presumably, supervision would shift away from a "power-dominant" one, although the role of evaluation would seem to remain a barrier to such a relationship. In his review of field experiences in teacher education, McIntyre (1983) supports more research on behavior change in field experiences, as opposed to attitudinal and perceptual change. He also indicates a need for a stronger research base for the evaluations of student teachers and he supports Zeichner's emphasis on inquiry-oriented practice. Clinical professorships are also supported as is a clearer idea of the purpose of field experiences and teacher education.

Zeichner and Teitelbaum (1982) support an inquiry-based approach. By this they mean one that fosters a critical attitude toward teaching and the contexts that surround it, emphasizing selectivity, and consideration of moral and ethical criteria and beliefs. They oppose the wholesale adoption of personalized approaches which attempt to match experiences with concerns because these methods may limit further growth. They also make a salient point that even if concerns follow developmental levels, it does not imply the nature of interventions.

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Gitlin and Teitelbaum (1983) suggest that future teachers learn about classrooms by using ethnographic techniques. Such study would allow a closer link between theory and practice by developing more reflective perspectives about teaching and by providing a way to study contexts and their effects.

Some studies support the utility of these approaches. Warner (1985) studied 17 student teachers who received cognitive discrimination training based on research about teaching and expert teacher characteristics and behavior. The training included presentation of behavior, teaching discriminations based on relevant dimensions, and showing videotapes of teachers to illustrate particular concepts. Concepts were applied to case studies or to lesson preparation. Student teachers were later interviewed about their ideas on planning, their implicit theories of teaching, their choice of pupil activities, and decision-making processes. Student teachers who were in the program were found to be more similar to experienced teachers in their thinking than they were to a group of beginning teachers.

A study by O'Shea (1984) compared teachers trained in three different programs. In one program the focus was on humanistic education, another program received a "standard" approach, and a third program had a laboratory emphasis, using diagnostic and prescriptive practice with small groups of laboratory school children. This approach included use of videotapes, a technology-of-instruction orientation, and a rule-grounded approach to classroom management. The program also gave greater weight to deriving knowledge about classrooms from studying actual practice. An important feature of this program was that Master teachers working in the program reinforced the program's principles.

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Program effectiveness was assessed using self-perceptions of students and information about the number of recruits seeking entrance to the program, compared to other available programs. While other criteria more related to program outcomes would have been desirable, those used supported the conclusion that the approach was effective.

In summary, research suggests that the clinical components of learning to teach are intense interpersonal experiences, rather than focused on the acquisition of specific skills or models of teaching. A base of codified knowledge is not explicit and the experience is driven by an emphasis on practicality. Some studies do demonstrate the possibility of building stronger clinical programs.

Discussion

Two broad lines of inquiry on the processes of learning to teach are evident in the research. One point of view considers mainly how teachers adapt to and acquire the teaching role. Earlier research in this vein tended to regard the new teacher as shaped by a system and reactive to it. More recent research, while not denying the potency of socialization forces, has emphasized the individual nature of teacher development and the ability of individuals to affect their own destiny. A second point of view is that of teacher education as a process of skill acquisition. This type of research examines conditions that facilitate the learning of particular teaching behaviors or knowledge about teaching. The accumulated findings from this research, as noted earlier, provide a basis for designing training programs to achieve short-term behavior changes. It is clear, however, that with the exception of Copeland (1977, 1981) and a few other studies, this perspective fails to take into account contextual factors that might

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inhibit or facilitate the generalization of teaching skills and knowledge to other settings.

If the teaching skills researchers in the main ignore context, the socialization researchers ignore teaching knowledge and skills. As a result, one can spend considerable time studying research on teacher socialization without encountering any information about what the teacher actually does in the classroom and what effects the teaching activities have on students.

Researchers on learning to teach could usefully adopt both perspectives. Research such as the Griffin et al. (1983) student teaching study and Copeland's work clearly indicate the context bound nature of the clinical training components, while the Griffin et al. (1985) induction study implies the importance of setting variables on influences on teachers' classroom behavior and decisions. Teacher educators must develop better methods to help teachers acquire knowledge and skills that generalize beyond their training settings and which also enable them to cope with the demands of future settings, without sacrificing the skills and knowledge acquired earlier.

Research on teaching knowledge and skills that permits consideration of different contexts such as social factors and academic content has promise for developing a stronger base for the next generation of teacher education programs. Examples of types of research with this potential includes studies of expert teacher knowledge and skills, such as those conducted in the area of mathematics by Leinhardt and Smith (1985) and in classroom management (Leinhardt, Weidman, & Hammond, 1984). Studies of expert teachers can be conducted in any subject context or setting and would be especially useful if comparisons

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were made to novice teachers at different stages of development. Such research can attend to teacher thinking about lessons or concepts in specified contexts, thus permitting an accumulation of information about the factors that shape actual classroom behavior and decisions. Other types of research that can provide information about context effects while at the same time focusing on teacher behavior or knowledge are the study of lesson organization (Gump, 1982) and how it affects learning (e.g., Good, Grouws, & Ebemeir, 1983) and studies of teacher planning and conduct of academic work (Doyle, 1984). Research on lesson organization and academic work considers the instructional period or day as composed of many segments of time filled with different activities. In most of these activities, students are expected to do various types of work. The teacher's task in organizing instruction is choosing and arranging activities so that the students can achieve academic and other educational goals. Doyle considers the academic task, including the learning outcome and the operations that help students achieve it, as the means that the curriculum is enacted in the classroom. Studies of classroom activities and academic tasks can be done from a variety of perspectives of course. The utility of these concepts is that it is possible to use them as a basis for understanding how teachers plan and organize work for students and to examine the basis for teacher choices among competing activities and tasks, including various contextual factors. The concepts also might be a bridge between pedagogical and content knowledge and between teaching methods knowledge and the teacher's conduct of instruction. While the above is not an exhaustive list of research approaches, it does illustrate several procedures that

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would allow an examination of how teaching skills and knowledge develop in a context specific way.

In addition to the preceding directions for research, more longitudinal studies of teacher acquisition of skills and knowledge are needed. Concomitant with such research should be the development of a coherent framework for describing and categorizing the various forms of teaching skills and cognitions (cf., Smith, 1980, for an example). A guiding framework or taxonomy would make it easier for teacher educators to utilize the research in program development. Such a framework would also clarify topics needing more investigation.

This review began with an anecdote about John Adams, so perhaps it should end with some further reflection from the perspective of some of the research literature. Although Adams' reliance on his early teacher's methods was predictable, no evidence was given that he shared the beginning teacher's typical concerns for discipline. Instead, he seemed to have a precocious interest in how his methods were affecting his students. A strongly developed sense of self-efficacy can be inferred from his willingness to change methods and by his ability to "keep school" for 50 boys of varying ages. It is enticing to imagine being an ethnographer transported back in time to observe this remarkable man as a teacher, to analyze his teaching activities, and to interview him to gain his unique perspectives about learning to teach. In one respect though, Adams was not unique as a teacher: after three years he quit teaching and began his practice of law.

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